

1 WHAT IS CLAIMED IS:

1. A surgical apparatus comprising:
an endoscopic portion including an elongated tubular section
5 having opposed proximal and distal ends;
an articulating section pivotally connected to a distal end portion
of said endoscopic portion;
tool means operatively associated with said articulating section
10 and including at least two cooperating members movable between a closed position
and an open position;
rotating means cooperating with a proximal end of said
endoscopic portion for moving said at least two cooperating members between said
closed position and said opened position; and
15 means cooperating with said proximal portion of said endoscopic
portion for pivoting said articulating section relative to a longitudinal axis of said
endoscopic portion within an angular degree of rotation.

20 2. A surgical apparatus as in claim 1 wherein said tool means
comprises a retractor assembly.

3. A surgical apparatus as in claim 1 wherein said moving means
25 includes knob means mounted for rotation relative to said endoscopic portion and
driving means threadably associated with said knob means movable in an axial
direction in response to rotation of said knob means.

30 4. A surgical apparatus as recited in claim 2, wherein said retractor
assembly includes a pair of atraumatic cooperating rod members.

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1 5. A surgical apparatus as recited in claim 2, wherein said retractor
assembly includes a plurality of interleaved blade members.

5 6. A surgical apparatus as recited in claim 3, wherein said knob
means comprises an elongated knob member having a threaded axial bore extending at
least partially therethrough for operatively receiving said driving means.

10 7. A surgical apparatus as recited in claim 3, wherein said driving
means comprises an elongated threaded screws member, and an elongated control rod
extending from a distal end of said screw member to said retractor assembly.

15 8. A surgical apparatus as recited in claim 4, wherein said retractor
assembly further includes a yoke member having a set of cam slots, and a camming
pin movable within said of cam slots for cooperating with said pair of cooperating rod
members.

20 9. A surgical apparatus as recited in claim 5, wherein said retractor
assembly further includes a yoke member provided with a set of camming slots, and a
camming pin movable within said set of cam slots for cooperating with said plurality
of interleaved blade members.

25 10. A surgical apparatus as recited in claim 1, wherein said means
for pivoting said articulating section includes camming means associated with said
handle portion and cooperative linkage means associated with said endoscopic portion.

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1 11. A surgical apparatus as recited in claim 10, wherein said
camming means including a barrel cam assembly including a cam slot defined in said
handle portion and a cam follower disposed in said handle portion for translating
5 relative to said cam slot between a proximal position and a distal position.

 12. A surgical apparatus as recited in claim 11, wherein said linkage
means includes an elongated inner tubular member having a proximal end portion
associated with said cam follower and a distal end portion associated with a linkage
10 mechanism interconnecting said articulating section to said camming means.

 13. A surgical apparatus as recited in claim 12, wherein said linkage
mechanism includes a base link connected to said distal end portion of said inner
15 tubular member and a connective link pivotably connected to said base link at one end
thereof and to said articulating section at the opposed end thereof.

 14. A surgical apparatus comprising:
20 an axial handle portion;
 an endoscopic portion extending axially from said handle
portion;
 an articulating section pivotably connected to a distal end
25 portion of said endoscopic portion;
 a retractor assembly operatively associated with said articulating
section and including a pair of cooperating rod members movable between a closed
position and an open position.
30 means associated with said handle portion and said endoscopic
portion for moving said pair of cooperating rod members between said closed position

1 and said opened position, said moving means including knob means mounted for
rotation relative to said handle portion, and driving means threadably associated with
said knob means movable in an axial direction in response to rotation of said knob
5 means; and

means associated with said handle portion and said endoscopic
portion for pivoting said articulating section relative to a longitudinal axis of said
endoscopic portion within an angular degree of rotation.

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15. A surgical apparatus as recited in claim 14, wherein said knob
means comprises an elongated knob member having a threaded axial bore extending at
least partially therethrough for operatively receiving said driving means.

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16. A surgical apparatus as recited in claim 14, wherein said driving
means comprises an elongated threaded screw member, and an elongated control rod
extending from a distal end of said screw to said retractor assembly.

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17. A surgical apparatus as recited in claim 14, wherein said
retractor assembly further includes a yoke member having a set of cam slots, and a
camming pin movable within said set of cam slots for cooperating with said pair of
cooperating rod members.

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18. A surgical apparatus as recited in claim 14, wherein said means
for pivoting said articulating section includes camming means associated with said
handle portion and cooperative linkage means associated with endoscopic portion.

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1 19. A surgical apparatus as recited in claim 18, wherein said
camming means includes a barrel cam assembly including a cam slot defined in said
handle portion and a cam follower disposed in said handle portion for translating
5 relative to said cam slot between a proximal position and a distal position.

 20. A surgical apparatus as recited in claim 19, wherein said linkage
means includes an elongated inner tubular member having a proximal end portion
associated with said cam follower and a distal end portion associated with a linkage
10 assembly interconnecting said articulating section to said camming means.

 21. A surgical apparatus as recited in claim 20, wherein said linkage
mechanism includes a base link connected to said distal end portion of said inner
15 tubular member and a connective link pivotably connected to said base link at one end
thereof and to said articulating section at the opposed end thereof.

 22. A surgical apparatus comprising:
20 an axial handle portion;
 an endoscopic portion extending from said handle portion;
 an articulating section pivotably connected to a distal end
portion of said endoscopic portion;
25 a retractor assembly operatively associated with said articulating
section and including a plurality of interleaved blade members movable between a
closed position and an open position.

 means associated with said handle portion and said endoscopic
30 portion for moving said plurality of interleaved blade members between said closed
position and said open position, said moving means including knob means mounted

1 for rotation relative to said handle portion, and driving means threadably associated
with said knob means movable in an axial direction in response to rotation of said
knob means; and

5 means associated with said handle portion and said endoscopic
portion for pivoting said articulating section relative to a longitudinal axis of said
endoscopic portion within an angular degree of rotation.

10 23. A surgical apparatus as recited in claim 22, wherein said knob
means comprises an elongated member having a threaded axial bore hole extending at
least partially therethrough for operatively receiving said driving means.

15 24. A surgical apparatus as recited in claim 22, wherein said driving
means comprises an elongated threaded screw member, and an elongated control rod
extending from a distal end of said screw member to said retractor assembly.

20 25. A surgical apparatus as recited in claim 22, wherein said
retractor assembly further includes a yoke member provided with a set of camming
slots, and a camming pin operatively associated with said camming slots for
cooperating with said plurality of interleaved blade members.

25 26. A surgical apparatus as recited in claim 22, wherein said means
for pivoting said articulating section includes camming means associated with said
handle portion and cooperative linkage means associated with said endoscopic portion.

30 27. A surgical apparatus as recited in claim 26, wherein said
camming means includes a barrel cam assembly including a cam slot defined in said

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1 handle portion and a cam follower disposed in said handle portion for translating
relative to said cam slot between a proximal position and a distal position.

5 28. A surgical apparatus as recited in claim 27, wherein said linkage
means includes an elongated inner tubular member having a proximal end portion
associated with said cam follower and a distal end portion associated with a linkage
assembly interconnecting said articulating section to said camming means.

10 29. A surgical apparatus as recited in claim 28, wherein said linkage
mechanism includes a base link connected to said distal end portion of said inner
tubular member and a connective link pivotably connected to said base link at one end
thereof and to said articulating section at the opposed end thereof.

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30. A surgical apparatus comprising:

(a) an axial handle portion

20 (b) an endoscopic portion extending axially from said handle
portion;

(c) an articulating section pivotably connected to a distal end
portion of said endoscopic portion;

25 (d) a retractor assembly operatively associated with said articulating
section and including at least two cooperating retractor members movable between a
closed position and an open position;

(e) means for moving said pair of cooperating retractor members
between said closed position said open position, said means including;

30 (i) a knob member mounted for rotation relative to said handle
portion;

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1 (ii) a driving member threadably associated with said knob
member for moving axially in response to rotation of said knob member; and

(iii) an elongated control rod extending from said driving
5 member to said retractor assembly; and

(f) means for pivoting said articulating section relative to the
longitudinal axis of said endoscopic portion within an angular degree of rotation, said
means including:

10 (i) camming means movable with respect to said handle portion
between a proximal position and a distal position; and

(ii) linkage means associated with said endoscopic portion for
connecting said camming means with said articulating section.

15 31. A surgical apparatus comprising:
a handle portion;

an endoscopic portion extending axially from said handle
portion;

20 tool means disposed adjacent a distal end of said endoscopic
portion; and

fluid delivery means, integral with said surgical apparatus, for
passing fluid through said endoscopic portion to an operative site.

25 32. A surgical apparatus as in claim 31 wherein said tool means
comprises cooperating jaw structure.

30 33. A surgical apparatus as in claim 31 wherein said tool means
comprises a retractor assembly.

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1 34. A surgical apparatus as in claim 31 further comprising an
articulating section pivotally connected between said distal end portion of said
endoscopic portion and said tool means and means associated with said handle portion
5 and said endoscopic portion for pivoting said retractor means relative to a longitudinal
axis of said endoscopic portion.

 35. A surgical apparatus as in claim 32 wherein said cooperating
10 jaw structure comprises grasping jaws.

 36. A surgical apparatus as in claim 32 wherein said cooperating
jaw structure comprises dissecting jaws.

15 37. A surgical apparatus as in claim 33 wherein said retractor
assembly comprises a pair of atraumatic cooperating rod members.

 38. A surgical apparatus as in claim 33 wherein said retractor
20 assembly includes a plurality of interleaved blade members.

 39. A surgical apparatus as in claim 34 further comprising sleeve
means for protecting the pivotal connection between the articulating section and the
25 endoscopic portion.

 40. A surgical apparatus as in claim 37 wherein said interleaved
blade members are collectively formed in a substantially cylindrical shape having an
30 atraumatic end portion when in the closed configuration.

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1 41. A surgical apparatus as in claim 31 further comprising annular
seal structure disposed around at least a portion of the exterior of said endoscopic
portion.

5 42. A surgical apparatus as in claim 38 wherein said sleeve means is
comprised of a flexible plastic material.

10 43. A surgical apparatus as in claim 41 wherein said flexible plastic
material is sealed to both the articulating section and the distal end of the endoscopic
portion.

15 44. A surgical apparatus as in claim 31 wherein said fluid delivery
means includes an injection port disposed in said handle portion and communicating
with the interior of said endoscopic portion.

20 45. A surgical apparatus as in claim 43 wherein said injection port
is connected to at least one distribution port by a connective tube.

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